

WHAT IS CLAIMED IS:

1. A printing apparatus which uses a printing head provided with printing elements different in a size of dot  
5 formed by said printing elements to perform printing on a printing medium, said apparatus comprising:

data producing means for producing printing data corresponding to each of the printing elements of the printing head, different in the size of dot formed, under  
10 a predetermined condition; and

conversion means for converting the printing data produced by said data producing means into dot data for forming and disposing a dot in a pixel, said conversion means executing the conversion independently for and  
15 correspondingly to each of the different sizes of dots.

2. A printing apparatus as claimed in claim 1, wherein the predetermined condition for producing the printing data is a condition that a change in density of an image,  
20 which is printed with dots formed based on the printing data corresponding to each of the printing elements different in the size of dot formed, is linear.

3. A printing apparatus as claimed in claim 2, wherein  
25 the dot data obtained thorough the conversion by said conversion means is what causes the larger size of dot to be disposed correspondingly to the density of an

intermediate or less in a density range expressed with dots formed based on the dot data.

4. A printing apparatus as claimed in claim 3, wherein  
5 the printing elements include an ink ejection opening for ejecting ink.

5. A printing apparatus as claimed in claim 4, wherein  
10 the printing head arranges the ejection openings ejecting ink of a same color and different ejection amount in parallel and in a scanning direction of the printing head, and is used for forming the dots different in size by means of ejection openings ejecting ink different in ejection amount.

15 6. A printing apparatus as claimed in claim 4, wherein the printing head arranges the ejection openings ejecting ink of a same color and different ejection amount alternately in a direction perpendicular to a scanning  
20 direction of the printing head, and is used for forming the dots different in size by means of ejection openings ejecting ink different in ejection amount.

7. A printing apparatus as claimed in claim 5, wherein  
25 the printing head arranges a group of the ejection openings of a plurality of ink colors and other group of the ejection opening group of the plurality of ink colors symmetrically

with respect to an axis perpendicular to the scanning direction.

8. A printing apparatus as claimed in claim 4, further  
5 comprising a plurality of print buffers corresponding to  
respective inks of different ejected amount and of a same  
color, for storing the dot data selectively in the  
plurality of buffers so as to eject ink from the  
corresponding ejection opening.

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9. A method of producing printing data used in a printing  
apparatus which uses a printing head provided with printing  
elements different in a size of dot formed by said printing  
elements to perform printing on a printing medium, said  
15 method comprising the steps of:

producing printing data corresponding to each of the  
printing elements of the printing head, different in the  
size of dot formed, under a predetermined condition; and

20 converting the printing data produced by said data  
producing step into dot data for forming and disposing a  
dot in a pixel, said converting step executing the  
conversion independently for and correspondingly to each  
of the different sizes of dots.

25 10. A method as claimed in claim 9, wherein the  
predetermined condition for producing the printing data  
is a condition that a change in density of an image, which

is printed with dots formed based on the printing data corresponding to each of the printing elements different in the size of dot formed, is linear.

5 11. A method as claimed in claim 10, wherein the dot data obtained thorough the conversion by said converting step is what causes the larger size of dot to be disposed correspondingly to the density of an intermediate or less in a density range expressed with dots formed based on the  
10 dot data.

12. A method as claimed in claim 11, wherein the printing elements include an ink ejection opening for ejecting ink.

15 13. A program for causing an information processing apparatus to execute a printing data producing process, which produces printing data used in a printing apparatus which uses a printing head provided with printing elements different in a size of dot formed by said printing elements  
20 to perform printing on a printing medium, said printing data producing process comprising the steps of:

producing printing data corresponding to each of the printing elements of the printing head, different in the size of dot formed, under a predetermined condition; and

25 converting the printing data produced by said data producing step into dot data for forming and disposing a dot in a pixel, said converting step executing the

conversion independently for and correspondingly to each  
of the different sizes of dots.